

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Carlson et al.

Confirmation No.: 3994

Serial No.: 09/224,202

Group Art Unit: 2627

Filed: December 30, 1998

Examiner: Andrew L. Snizek

For: **DISK DRIVE WITH IMPROVED TECHNIQUES FOR DETECTING  
HEAD FLYING HEIGHT (AS AMENDED)**

Date: January 22, 2008

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P.O. Box 1450  
Alexandria, VA 22313-1450

**APPELLANTS' REPLY BRIEF ON APPEAL UNDER 37 C.F.R. §41.41**

Sir:

Appellants' Reply Brief is filed in response to the Examiner's Answer mailed December 10, 2007. This Reply Brief highlights how the Examiner's Answer continues to fail to establish a *prima facie* case of anticipation and/or obviousness in rejecting the pending claims.

For at least the reasons explained in Appellants' Appeal Brief and the present Reply Brief, Appellants request reversal of the claim rejections and passing of the application to issue.

Appellants note that the Examiner's remarks in Section 9 "Grounds of Rejection" of the Examiner's Answer are word-for-word identical to the Section 102 and Section 103 rejections provided in the Office Action of November 17, 2005, as bases to reject the pending claims. Accordingly, Appellants will only address the arguments provided by the Examiner in Section 10 "Response to Argument" of the Examiner's Answer.

**1. SECTION 102 REJECTIONS—BROWN ET AL.**

As noted in Appellants' Appeal Brief, Claim 87 recites, in part, a detection circuit that determines whether the head is within an acceptable flying height range "while the head is at a substantially constant flying height", while Claim 97 recites a detection circuit that determines whether the head is within an acceptable flying height range "without moving the head to a substantially different flying height".

The Examiner's Answer argues that U.S. Patent 4,777,544 to Brown et al. (hereinafter "Brown") discloses these recitations of Claims 87 and 97 at Col. 7, lines 15-45. See Examiner's Answer, Page 6. In particular, the Examiner's Answer asserts that "at a second measured time (subsequent measured time) the readback signal amplitudes at the two wavelengths are determined...meaning that the readings of each wavelength occur when the head is at a substantially constant flying height." Examiner's Answer, Page 6. As such, the Examiner's Answer appears to argue that the apparatus of Brown determines whether the head is within an acceptable flying height range based on a second or subsequent measurement of the readback signals at two wavelengths and without moving the head to a different fly height.

Appellants respectfully disagree. As an initial matter, Appellants note that the discussion of a "second" or "subsequent" measurement in determining a flying height provided in the Examiner's Answer itself implies that a first measurement is also involved in determining the flying height. Indeed, as provided in the cited portion of Brown:

**A second embodiment of the invention utilizes a dual-wavelength method for measuring changes in the head/disk spacing.** This method has intrinsic long term stability and is therefore suitable for incorporating in a disk file to provide a warning for loss of head/disk clearance which may lead to a head crash. The dual-wavelength method requires recording two magnetic wavelengths  $\lambda_a$  and  $\lambda_b$  either on adjacent tracks or preferably interleaved on one track or track segment. **The zero clearance value is measured as before so that the absolute flying height can be measured. Subsequently, by measuring only the ratio of the readback signal amplitudes at the two wavelengths, any change in flying height occurring between the first measurement and the subsequent measurement can be calculated** by

$$d_2 - d_1 = \frac{\lambda_a \lambda_b}{2\pi(\lambda_b - \lambda_a)} \ln \frac{R_2}{R_1}$$

**where  $R_1$  and  $R_2$  are the ratios** of the signal amplitudes **measured for the two wavelengths at times 1 and 2.** The absolute flying height can be calculated as a constant times the product of two terms, the first of the two terms being the product of the two wavelengths divided by the difference between the two wavelengths, the second of the two terms being the ratio of said first and second signals, (measured at time 1) expressed in decibels, subtracted from the ratio of the third and fourth signals (measured at time 2), expressed in decibels. By the use of this

embodiment, signal perturbations such as gain drift and track misregistration, to the extent they are independent of wavelength, do not change the measured signal ratios and, therefore, do not cause error.

Brown, Col. 7, lines 13-45 (*emphasis added*). Accordingly, the cited portion of Brown describes a zero clearance value measurement, a subsequent measurement of the ratio of the readback signal amplitudes at the two wavelengths (as noted in the Examiner's Answer), and calculation of a change in flying height between the first measurement and the subsequent measurement. In describing the zero clearance value measurement for the above-described embodiment, Brown notes that "[t]he flying height is lowered to substantially zero, and readback signals are sensed at the two wavelengths". Brown, Col. 3, lines 49-51. As such, Appellants submit that the zero clearance value measurement of Brown is performed at a different flying height than the subsequent measurement, and that both measurements are used to calculate the change in flying height discussed in the cited portion of Brown. Moreover, Appellants submit that the calculation of a change in flying height described in Brown inherently involves at least two different flying heights. Thus, the cited portion of Brown does not disclose or suggest determining whether the head is within an acceptable flying height range "while the head is at a substantially constant flying height", and/or "without moving the head to a substantially different flying height", as recited in Claims 87 and 97, respectively.

Indeed, as discussed in the Decision on Appeal of April 28, 2004, and previously cited in Appellants' Appeal Brief, the Board of Patent Appeals and Interferences (hereinafter "the Board") has stated that "[a]s argued by appellants, the determination of flying height in Brown requires that the drive be moved to a different reference flying height such as zero clearance and that additional measurements be made at the zero clearance flying height". The Examiner's Answer appears to argue that the Board's decision is inapplicable in the present proceedings because the Board's decision was made in response to a different set of claim recitations than is now present upon appeal. *See* Examiner's Answer, Pages 6-7. However, Appellants respectfully submit that, even though discussed in the context of a different set of claims, the Board's prior characterization of the determination of flying height in Brown is independent of the language of the claims at issue. In other words, the recitations of the pending claims,

while different than those previously reviewed by the Board, do not change the teachings of Brown. As such, Appellants merely rely on the cited portion of the Board's Decision on Appeal of April 28, 2004, as evidence that the Examiner's position (*i.e.*, that Brown teaches determining whether the head is within an acceptable flying height range "while the head is at a substantially constant flying height" and/or "without moving the head to a substantially different flying height") is not supported by the Board's prior interpretation of Brown.

The Examiner's answer further argues that the discussion in Brown of wavelengths  $\lambda_a$  and  $\lambda_b$  that are interleaved on one track discloses first and second patterns that are located in non-overlapping circumferential portions of a first track, as recited in Claims 87 and 97. *See* Examiner's Answer, Page 7. However, Appellants respectfully note that the text of Brown provides no definition of the term "interleaved". Nor does the Examiner's Answer offer any explanation of how the "interleaved" wavelengths  $\lambda_a$  and  $\lambda_b$  described in Brown disclose or suggest first and second patterns on circumferential portions of a track. *See* Examiner's Answer, Page 7. Thus, Appellants submit that the cited portion of Brown also fails to disclose or suggest first and second patterns located in "non-overlapping *circumferential* portions of the first track", as recited in Claims 87 and 97.

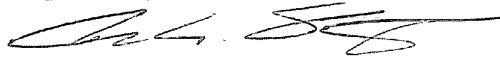
Appellants respectfully note that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). MPEP, § 2131. However, as discussed above, Brown does not disclose or suggest each and every element recited in Claims 87 and 97. Accordingly, Appellants submit that the Examiner's Answer fails to establish a *prima facie* case of anticipation over Brown, and that the rejection of Claims 87 and 97 under 35 USC §102(b) should be reversed. In addition, the rejections of dependent Claims 88, 92, 93, 98, 102, 103, 108-112, 115, 118-122, 125, and 126 should also be reversed at least based on their dependence from Claims 87 and 97.

**VIII. Conclusion**

In light of the above discussion, Appellants submit that the pending claims are directed to patentable subject matter and, therefore, requests reversal of the rejections of the claims and passing of the application to issue.

It is not believed that an extension of time and/or additional fee(s) are required, beyond those that may otherwise be provided for in documents accompanying this paper. In the event, however, that an extension of time is necessary to allow consideration of this paper, such an extension is hereby petitioned for under 37 C.F.R. §1.136(a). Any additional fees believed to be due in connection with this paper may be charged to Deposit Account No. 50-0220.

Respectfully submitted,

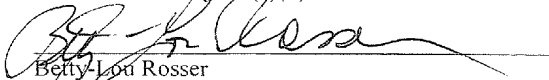


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**CERTIFICATION OF TRANSMISSION**

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4) to the U.S. Patent and Trademark Office on January 22, 2008.



Betty Lou Rosser  
Date of Signature: January 22, 2008